



Sequence Listing - additional sequences.ST25
SEQUENCE LISTING

<110> Genetic Technologies
Simons, Malcom J.

<120> Intron Sequence Analysis Method for Detection of Adjacent and
Remote Locus Alleles as Haplotypes

<130> 005493.P001

<140> 09/935,998
<141> 2001-08-23

<150> US 07/949,652
<151> 1992-09-23

<150> US 07/551,239
<151> 1990-07-11

<150> US 07/465,863
<151> 1990-01-16

<150> US 07/405,499
<151> 1989-09-11

<150> US 07/398,217
<151> 1989-08-25

<160> 87

<170> PatentIn version 3.2

<210> 1
<211> 911
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-C1 allele

<400> 1
gattaccaat attgtgcgac ctactgtatc aataaacaaa aaggaaactg gtctctatga 60
gaatctctac ctggtgcttt cagacaacac ttcaccaggt ttaaagagaa aactcctgac 120
tctacacgtc cattcccagg gcgagctcac tgtctggcag caagttcccc atggtcgagt 180
ttccctgtac aagagtccaa ggggagaggt aagtgtcctt tattttgctg gatgtagttt 240
aatattacct gaggtaaggt aaggcaaaga gtgggaggca gggagtccag ttcagggacg 300
gggattccag gagaagtga ggggaagggg ctgggcgcag cctgggggtc tctccctggg 360
ttccacagac agatccttgg ccaggactca ggcacacagt gtgacaaaga tgcttggtgt 420
aggagaagag ggatcagacg aagtcccagg tcccgggcgg ggttctcagg gtctcaggct 480
ccaaggggcg tgtctgcact ggggagggcg cgcgttgagg attctccact cccctgagtt 540
cacttcttct cccaacctgc gtcgggtcct tcttcctgaa tactcatgac gcgtccccaa 600

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ttcccactcc cattgggtgt cgggttctag aagccaatca gcgtctccgc agtcccggtt	660
ctaaagtccc cagtcaccca cccggactca gattctcccc agacgccgag atgcgggtca	720
tggcgccccg aaccctcatc ctgctgtctt cgggagccct ggccctgacc gagacctggg	780
cctgtgagtg cgggggttggg agggaaacgg cctctgcgga gaggaacgag gtgcccggcc	840
ggcaggcgca ggacccgggg agccgcgcag ggaggagggt cgggcgggtc tcagcccctc	900
ctcgccccca g	911

<210> 2
 <211> 587
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 <213> Homo sapiens

<220>
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 <223> Class I-C1 allele

<400> 2	
gtaccagggg cagtggggag ccttccccat ctcccgtaga tctcccggca tggcctccca	60
cgaggagggg aggaaaatgg gatcagcgct agaatatcgc cctccctgaa atggagaatg	120
ggatgagttt tcctgagttt cctctgaggg ccccctctgc tctctaggac aattaaggga	180
tgaagtcctt gaggaaatgg aggggaagac agtccttgga atactgatca ggggtcccct	240
ttgaccactt tgaccactgc agcagctgtg gtcaggctgc tgacctttct ctcaggcctt	300
gttctctgcc tcacgttcaa tgtgtttgaa ggtttgattc cagcttttct gagtccttcg	360
gcctccactc aggtcaggac cagaagtcgc tgttcctccc tcagagacta gaactttcca	420
atgaatagga gattatccca ggtgcctgtg tccaggctgg cgtctggggt ctgtgcccc	480
ttccccaccc caggtgtcct gtccattctc aggatgggtca catgggcgct gttggagtgt	540
cgcaagagag atacaaagtg tctgaatttt ctgactcttc ccgtcag	587

<210> 3
 <211> 913
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 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Class I-C2 allele

<400> 3	
gattaccaat attgtgctac ctactgtatc aataaacaaa aaggaaactg gtgtgtatga	60
gaatctctac ctggtgcttt cagacaacac ttcaccaggt ttaaagagaa aactcctgac	120
tctacacgtc cattccccagg gcgagctcac tgtctggcat caagttcccc atggtgagtt	180
tccctgtaca agagtccaag gggagaggta agtgtccttt attttgctgg atgtagttta	240

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atattacctg aggtaaggta acggaaagag tggggaggca gggagtccag ttcagggacg	300
gggattccag gagaagtga ggggaagggg ctggcgagc ctgggggtct ctccctggtt	360
tccacagaca gatccttccg gaggactcag gcacacagtg tgacaaagat gcttggtgta	420
ggagaagagg gatcaggacg aagtcccaga cccgggcggg gttctcaggg tctcaggctc	480
caaggggctg gtctgcactg gggaggcgcc gcgttgagga ttctccactc ccctgagttt	540
cacttcttct cccaacctgc gacgggtcct tcttctgaa tactcatgac gcgtcccaa	600
ttccactcc attgggtgtc gggttctaga gaagccaatc accgtctccg cagtcccgg	660
tctaaagtcc ccagtcaccc acccggaactc ggattctccc cagacgccga gatgcgggtc	720
atggcgcccc gaacctcat cctgctgctc tcgggagccc tggccctgac cgagacctg	780
gcctgtgagt gcgggggttg gagggaaacg gcctctgcg agaggagcga gggggccgcc	840
cggcgagggc caggacccg gagcccgcg agggaggagg gtcgggcggg tctcagcccc	900
tcctctcccc cag	913

<210> 4
 <211> 588
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Class I-C2 allele IVS3

<400> 4	
gtaccagggg cagtgggggag ccttccccat ctctctgtaga tctcccggga tggcctccca	60
cgaggagggg aggaaaatgg gatcagcgct agaatatcgc cctccctgaa atggagaatg	120
ggatgagttt tcctgagttt cctctgaggg cccctctgct tctctaggac aattaaggga	180
tgaagtcctt gaggaaaatgg aggggaagac agtccctgga atactgatca ggggtcccct	240
ttgaccactt tgaccactgc agcagctgtg gtcaggctgc tgacctttct ctcaggcctt	300
gttctctgcc tcacgttcaa tgtgtttgaa ggtttgattc cagcttttct gagtccttcg	360
gcctccactc aggtcaggac cagaagtcgc tgttcctccc tcagagacta gaactttcca	420
atgaatagga gattatccca ggtgcctgtg tccaggctgg cgtctgggtt ctgtgcccc	480
ttccccaccc cagggtgtcct gtccattctc aggatagtc catgggcgct gttggagtgt	540
cgcaagagag atacaaagtg tctgaatttt ctgactcttc ccgtgcag	588

<210> 5
 <211> 366
 <212> DNA
 <213> Homo sapiens

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<220>
 <221> misc_feature
 <223> Class I-C3 allele

<220>
 <221> misc_feature
 <222> (75)..(76)
 <223> "N" is an unidentified nucleotide

<400> 5
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 ttgggtgtcg gaccnntcta gaaggccggt cagcgtctcc gcagtcccgg ttctgaagtc 120
 cccagtcacc caccgcgact cagattctcc ccagacgccg agatgcgggt catggcgccc 180
 cggaccctca tcctgctgct ctggggagcc ctggccctga ccgagacctg ggccggtgag 240
 tgcggggttg ggaggggaatc ggcctcttgc ggagaggagc gaggggcccg cccggcgag 300
 ggcgaggac ccggggagcc gcgcaggag gagggtcggg cgggtctcag cccctcctcg 360
 cccag 366

<210> 6
 <211> 578
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Class I-C3 allele IVS3

<400> 6
 gtaccagggg cagtgggagc cttccccatc tcctgtagat ctcccgggat ggcctccac 60
 gaggagggga ggaaaatggg atcagcgcta gaatatgcc ctccctgaaa tggagaatgg 120
 gatgagtttt cctgagtttc ctctgagggc cccctctgct ctctgaggac aattaaggga 180
 tgaagtcctt gaagaaaatgg aggggaagac agtccctaga atactgatca ggggtcccct 240
 ttgaccactg cagcagctgt ggtcaggctg ctgaccttcc tctcaggcct tgttctctgc 300
 ctacagctca atgtgtttga aggtttgatt ccagcttttc tgagtccttc ggcctccact 360
 caggtcagga ccagaagtcg ctgttcctcc ctgagagact agaactttcc aatgaatagg 420
 agattatccc aggtgcctgt gtccaggctg gcgtctgggt tctgtgcccc cttccccacc 480
 ccaggtgtcc tgtccgttct caggatggc acatgggcgc tgttgaggatg tcgcaagaga 540
 gatacaaagt gtctgaattt tctgactctt cccgtcag 578

<210> 7
 <211> 717
 <212> DNA
 <213> Homo sapiens

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<220>
<221> misc_feature
<223> Class I-B27 allele

<400> 7
gagctcactc tctggcatca agttctccgt gatcagtttc cctacacaag atccaagagg 60
agaggtaagg agtgagaggc agggagtcca gttcagggac agggattcca ggaggagaag 120
tgaaggggaa gcggggtgggc gccactgggg gtctctccct ggtttccaca gacagatcct 180
tgtgccggac tcaggcagac agtgtgacaa agaggctggg tagggagaag agggatcagg 240
acgaacgtcc aaggccccgg gcgcggtctc aggggtctcag gctccgagag ctttgtctgc 300
attggggagg cgcacagttg gggttcccca ctcccacgag tttcacttct tctcccaacc 360
tatgtcgggt ctttcttcca ggatactcgt gacgcgtccc catttccact cccattgggt 420
gtcgggtgtc tagagaagcc aatcagtgtc gccgggggtcc cagttctaaa gtccccacgc 480
acccacccgg actcagaatc tcctcagacg ccgagatgcg ggtcacggcg ccccgaaccc 540
tcctcctgct gctctggggg gcagtggccc tgaccgagac ctgggctggg gagtgcgggg 600
tcaggcaggg aaatggcctc tgtggggagg agcgagggga cgcaggcggg ggcgcaggac 660
ccggggagcc gcgccgggag gaggggtcggg cgggtctcag cccctcctcg cccccag 717

<210> 8
<211> 575
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-B27 allele IVS3

<400> 8
gtaccagggg cagtggggag ctttcccatc ctctatagg tcgccgggga tggcctccca 60
cgagaagagg aggaaaatgg gatcagcgtc agaatgtcgc cctcccttga atggagaatg 120
gcatgagttt tcctgagttt cctctgaggg cccctcttct tctctaggac aattaaggga 180
tgacgtctct gaggaaatgg aggggaagac agtccctaga atactgatca ggggtcccct 240
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gatcaggagc agaagtcctt gttccccgct cagagactcg aactttccaa tgaataggag 420
attatcccag gtgcctgcgt ccaggctggg gtctgggttc tgtgcccctt cccacccca 480
gggtgcctgt ccattctcag gctggtcaca tgggtgggtc tagggtgtcc catgagagat 540
gcaaagcgcc tgaattttct gactcttccc atcag 575

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<210> 9
<211> 289
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-B58 allele

<400> 9
tctagagaag ccaatcagtg tcgccggggt cccagttcta aagtccccac gcacccaccc 60
ggactcagaa tctcctcaga cgccgagatg cgggtcacgg cgccccgaac cgtcctcctg 120
ctgctctggg gggcagtggc cctgaccgag acctggggccg gtgagtgcgg ggtcgggagg 180
gaaatggcct ctgtggggag gagcgagggg accgcaggcg ggggcgaggg acctgaggag 240
ccgcgccggg aggaggggtc ggcgggtctc agccccctct cgccccag 289

<210> 10
<211> 575
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-B58 allele IVS3

<400> 10
gtaccagggg cagtggggag ccttccccat ctcttatagg tcgccgggga tggcctccca 60
cgagaagagg aggaaaatgg gatcagcgct agaatgtcgc cctcccttga atggagaatg 120
gcatgagttt tcctgagttt cctctgaggg cccctctctc tctctaggac aattaaggga 180
tgacgtctct gaggaatgg aggggaagac agtccctaga atactgatca ggggtcccct 240
ttgacccttg cagcagcctt gggaaccgtg acttttcctc tcaggccttg ttctctgcct 300
cacactcagt gtgtttgggg ctctgattcc agcacttctg agtcacttta cctccactca 360
gatcaggagc agaagtcctt gttccccgct cagagactcg aactttccaa tcaataggag 420
attatcccag gtgcctgcgt ccaggctggg gtctgggttc tgtgcccctt cccacacca 480
ggtgtcctgt ccattctcag gctgggtcaca tgggtgggtcc taggggtgtcc catgagagat 540
gcaaagcgcc tgaattttct gactcttccc atcag 575

<210> 11
<211> 728
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-A2 allele

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<400> 11
aagcttactc tctggcacca aactccatgg gatgattttt ccttcctaga agagtccagg 60
tggaacagga aggagtggga gtcagggagt ccagttccag ggacagagat tacgggataa 120
aaagtgaag gagaggggacg gggcccatgc cgaggggtttc tcccttggtt ctcagacagc 180
tcttgggcca agactcaggg agacattgag acagagcgct tggcacagaa gcagaggggt 240
cagggcgaag tccagggccc caggcgttg ctctcaggggt ctcaggcccc gaagggcggt 300
gtatggattg gggagtccca gccttgggga ttccccaact ccgcagtttc ttttctccct 360
ctcccaacct atgtaggggtc cttcttcctg gatactcacg acgcggaccc agttctcact 420
cccattgggt gtcgggtttc cagagaagcc aatcagtgtc gtcgcgggtc cggttctaaa 480
gtccgcacgc acccaccggg actcagattc tccccagacg ccgaggatgg ccgtcatggc 540
gccccgaacc ctcgtcctgc tactctcggg ggctctggcc ctgaccaga cctgggcggg 600
tgagtgcggg gtcgggaggg aaacggcctc tgtggggaga agcaacgggc cgcctggcgg 660
gggcgcagga cccgggaagc cgcgccggga ggaggggtcg gcgggtctca gccactcctc 720
gtccccag 728

<210> 12
<211> 599
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-A2 allele IVS3

<400> 12
gtaccagggg ccacggggcg cctccctgat cgcctgtaga tctcccgggc tggcctccca 60
caaggagggg agacaattgg gaccaacact agaatatcgc cctccctctg gtcctgaggg 120
agaggaatcc tcctgggttt ccagatcctg taccagagag tgactctgag gttccgccct 180
gctctctgac acaattaagg gataaaatct ctgaaggaat gacgggaaga cgatccctcg 240
aatactgatg agtggttccc ttgacacac acaggcagca gccttgggccc cgtgactttt 300
cctctcaggc cttgttctct gttcacact caatgtgtgt ggggggtctga gtccagcact 360
tctgagtcct tcagcctcca ctcagggtcag gaccagaagt cgctgttccc tcttcaggga 420
ctagaatttc cacggaatag gagattatcc cagggtgcctg tgtccaggct ggtgtctggg 480
ttctgtgctc ctttcccat cccagggtgtc ctgtccattc tcaagatagc cacatgtgtg 540
ctggaggagt gtcccatgac agatcgaaaa tgcctgaatg atctgactct tcctgacag 599

<210> 13
<211> 450

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<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-A3 allele

<400> 13
ccgaagggct gtgtaaggat tggggagttc cagccttggg attccccaac tccgcagttt 60
cttttctccc ctgctcccaa cctacgtagg gtccttcatc ctggatactc acggacgcgg 120
accagttct cactccatt ggggtgtcggg tttccagaga agccaatcag tgtcgtcgct 180
gttctaaagc ccgcacgcac ccaccgggac tcagattctc cccagacgcc gaggatggtc 240
gtggagacca ggccgtcatg gcgccccgaa ccctcctcct gctactctcg ggggccctgg 300
ccctgacca gacctgggcg ggtgagtgcg gggtcgggag ggaaccacgc ctctgcgggg 360
agaagcaagg ggccctcctg cgggggcgca ggaccggggg agccgcgccg ggacgagggt 420
cgggcgggtc tcagccactg ctccccccag 450

<210> 14
<211> 576
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Class I-A3 allele IVS3

<400> 14
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aaggagggga gaccattggg acccacacta ggatattacc ctcccttggg ttctgaggga 120
gaggaattct tcttggtttc aggacctgga ccagagagtg actctgaggt ttcggcctgc 180
tcacaggcac aattaaggga taaatctctg aaggagtgcg gggaagacga ttccttggtg 240
tctggtgagt ggttcccttt ggcaccggcg acggccttgg gcccgtagact tttcctctca 300
ggccttggtc tctgcttcac actcaatgtg tgtgggggtc tgagtccagc acttctgagt 360
ccctcagcct ccactcaggt caggaccaga agtcgctgtt cccttctcag ggaatagaag 420
attatcccag gtgcctgtgt ccaggctggg gtctgggttc tgtgctccct tccccatccc 480
gggtgtcctg tccattctca agatggccac atgcgtgctg gtggagtgtc ccatgacaga 540
tgcaaaatgc ctgaattttc tgactcttcc cgtagc 576

<210> 15
<211> 435
<212> DNA
<213> Homo sapiens

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<220>
 <221> misc_feature
 <223> Class I-Ax allele

<220>
 <221> misc_feature
 <222> (348)..(348)
 <223> "N" is an unidentified nucleotide

<400> 15
 ccgaagggcg gtgtatggat tggggatgcc cagccttggg gattcgccac ctccgcagtt 60
 tctcttcttc tcacaacctg cgacgggtcc ttcttcctcg atactcacga agcggacaca 120
 gttctcattc ccactaggtg tcgggtttct agagaagcca atcggtgccg ccgcggtccc 180
 ggttctaaag tccccacgca cccaccgga ctcagattct cccagacgc cgaggatgtc 240
 gccgtcatgg cgccccgaac cctcctcctg ctgctctcag gggccctggc cctgacctag 300
 acctgggagc gtgagtgagc ggtctgcagg gaaatggctg ggaggagnga gggggccgccc 360
 cggcgggggtg cgcaggagccc agggagccgc gcaggaggga gggtcgggag ggtctcagct 420
 cctcctcgct cccag 435

<210> 16
 <211> 569
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Class I-Ax allele IVS3

<400> 16
 gtaccagggc cacagggcgc ctccctgatc gcctgtagat ctcccgggct ggcctccac 60
 aagaaagggg gacaaatggg accaactacta taatatcgcc ctccctctgg tcttgaggga 120
 gaggaatcct cttgggtttc cagagagtga ctctgagggt ccgcctgctc tctgacacaa 180
 ttaagggatg aaatctgtga ggaaatgaag ggaagacaat ccctggaata ctgatgagtg 240
 gttccctttg aactggcag cagccttggg ccccgtagct tttcctctca ggccttggtc 300
 tctgcttcac actcaatgtg cgtggggggtc tgagtcctca gcctccactc aggtcaggac 360
 cagaagtcgc tgttccctct tcagggacta gaattttcca cggaatagga gattattcta 420
 ggtgcctctg tctaggctgg tttctggggt ctgtgctccc ttccccaccc taggcattcct 480
 gtcaattctc aagatggcca catgcgtgct ggtggagtggt cccatgacag atgcaaaatg 540
 cctgaatttt ctgactcttt tcccgtcag 569

<210> 17
 <211> 442
 <212> DNA

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<213> Homo sapiens

<220>

<221> misc_feature

<223> Class I-A24 allele

<400> 17

ggccccgaag cggtgtatgg attggggagt cccagccttg ggattcccaa ttccgcagtt	60
tcttttctcc ctgtcccaac ctatgtaggg tccttctcct ggatactcac gacgcggacc	120
cagttctcac tcccattggg tgtcgggttt cgagagaagc caatcaatgt cgtcgcggtc	180
gctgttctaa agtccgcacg caccaccgg gactcagatt ctccccagac gccgaggatg	240
gccgtcatgg ggccccgaac cctcgtcctg ctactctcgg gggccctggc cctgaccag	300
acctgggcag gtgagtgcgg ggtcgggagg gaaatcgcc ctctgcgggg agaagcaagg	360
ggccgcctg gcgggggagc aagaccggg aagccgcgc gggaggagg tcgggcgggt	420
ctcagccact cctcgtcccc ag	442

<210> 18

<211> 558

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<223> Class I-A24 allele IVS3

<400> 18

gtaccagggg ccacggggcg cctccctgat cgcctgtagg tctcccgggc tggcctcccc	60
acaaggaggg gagacaattg ggaccaacac tagaatatcg ccctccctct ggtcttgagg	120
gagaggaatc ctctgggtt tccagatcct gtaccagaga gtgactctga ggttccgccc	180
tgctctctga cacaattaag ggataaaatc tctgacggaa tgacggaaag acgatccctc	240
gaatactgat gactgggtcc ctttgacacc ggcagcagcc ttgggaccgt gacttttctc	300
ctcaggcctt gttctctgct tcacactcaa tgttgtgtggg ggtctgagtc cagcacttct	360
gagtccctca gcctccactc aggtcaggac cagaagtcgc tgttccctct tcagggaata	420
gaagattatc ccagggcctg tgtccaagct ggtgtctggg ttctgtactc tcttccccgt	480
cccagggtgtc ctgtccattc tcaagatggc cacatgcatg ctggtggagt gtcccatgac	540
aggtgcaaaa cccgtcag	558

<210> 19

<211> 806

<212> DNA

<213> Homo sapiens

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<220>

<221> misc_feature

<223> DQA1-A3

<400> 19

gatctctgtg tagaatgtcc tgttctgagc cagtcctgag aggaaaggaa gtataatcaa	60
tttgttatta actgatgaaa gaattaagtg aaagataaac cttaggaagc agaggggaagt	120
taatctatga ctaagaaagt taagtactct gataactcat tcattccttc ttttgttcat	180
ttacattatt taatcacaag tctatgatgt gccaggctct caggaaatag tgaaaattgg	240
cacgcgatat tctgcccttg ttagcacac accgtagtgg gaaagaagtg cacttttaac	300
cggacaacta tcaacacgaa gcgggggagga agcagggggct ggaaatgtcc acagactttg	360
ccaaagacaa agcccataat atctgaaagt cagtttcttc catcattttg tgtattaagg	420
ttctttattc ccctgttctc tgccttcctg cttgtcatct tcactcatca gctgaccatg	480
ttgcctctta cggtgtaaac ttgtaccagt cttatgggtcc ctctgggcag tacagccatg	540
aatttgatgg agacgaggag ttctatgtgg acctggagag gaaggagact gtctggcagt	600
tgcctctgtt ccgcagattt agaagatttg acccgcaatt tgcactgaca aacatcgctg	660
tgctaaaaca taacttgaa atcgtgatta aacgctccaa ctctaccgct gctaccaatg	720
gtatgtgtcc accattctgc ctttctttac tgatttatcc ctttatacca agtttcatta	780
ttttctttcc aagaggtccc cagatc	806

<210> 20

<211> 819

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<223> DQA-1A1.2

<400> 20

gatctctgtg tagagtgtcc tattctgagc cagtcctgag aggaaaggaa gtataatcaa	60
tttgttatta accaatgaaa gaattaagtg aaagataaat cttaggaagc cagaggggaag	120
taaacctaatt ttctgactaa gaaagctaaa tactatgata actcattcat tccttctttt	180
gttcaattac attatttaat cataagtcca tgacgtgccca ggcactcagg aaatagtaaa	240
aattggacat gcgatattct gcccttgtgt agcgcacact agagtgggaa agaaagtgca	300
cttttaactg gacaactacc aacatgaaga ggggaggaag caggggctgg aaatgtccac	360
agactgtgcc aaaaaatgaa gcccataata tttgaaagtc aggtctttcc atcattttgt	420
gtattaaggt tctttcttcc tctgttctcc gccttcctgc ttgtcatctt cactcatcag	480
ctgaccacgt tgcctcttgt ggtgtaaaact tgtaccagtt ttacgggtccc tctggccagt	540

Sequence Listing - additional sequences.ST25

acacccatga atttgatgga gatgagcagt tctacgtgga cctggagagg aaggagactg	600
cctggcgggtg gcctgagttc agcaaatttg gaggttttga cccgcagggt gcactgagaa	660
acatggctgt ggcaaaacac aacttgaaca tcatgattaa acgctacaac tctaccgctg	720
ctaccaatgg tatgctgcca ccattctgcc tctctttact taataagcta tccctccata	780
ccaaggttca ttattttctt cccaagaggt cccagatc	819

<210> 21
 <211> 815
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DQA1-A4.1

<400> 21 gacctctgtg tagagtgtcc tgttctgagc cagtcctgag aggaaagaaa atacaatcag	60
tttgttatta actgatgaaa gaattaagtg aaagatgaat cttaggaagc agaaggaagt	120
aaacctaattc tctgactaag aaagctaaat accataataa ctcatctatt ccttcttttg	180
ttcaattaca ttgatttaata cataagtccg tgatgtgcca ggcactcagg aaatagtaaa	240
aactggacat gtgatattct gcccttgtgt agcgcacatt atagtgggaa agaaagcgca	300
attttaaccg gacaactacc aacaataaga gtggaggaag caggggttgg aaatgtccac	360
aggctgtgcc aaagatgaag cccgtaatat ttgaaagtca gttcttttca tcatcatttt	420
gtgtattaag gttctgtctt cccctgttct ctacttcct gcttgtcatc ttcactcatc	480
agctgaccac gtcgcctctt atgggtgtaaa cttgtaccag tcttacggtc cctctggcca	540
gtacacccat gaatttgatg gagatgagca gttctacgtg gacctgggga ggaaggagac	600
tgtctgggtgt ttgcctgttc tcagacaatt tagaatttga cccgcaattt gcactgacaa	660
acatcgctgt cctaaaacat aacttgaaca gtctgattaa acgctccaac tctaccgctg	720
ctaccaatgg tatgtgtcaa caattctgcc cctctttact gatttatccc ttcataccaa	780
gtttcattat tttattttcca agaggtcccc agatc	815

<210> 22
 <211> 1292
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DQB1

<400> 22 aagcttgtgc tctttccatg aataaatgtc tctatctagg actcagaggt gtaggtcctt	60
---	----

Sequence Listing - additional sequences.ST25

tccaacatag aagggactga acctcaacgg gacttgggag ggtaaatacta ggcatgggaa	120
ggaaggtatt ttaccacagg accaagagaa tacgcgtgtc agaacgaggc caggcttaat	180
tcctggacct atctcgtcat tccgttgaac tctcagattt atgtggataa ctttatctct	240
gaggtatcca ggagcttcat gaaaaatggg atttcatgcg agaacgccct gatccctcta	300
agtgcagagg tgcattgaaa atcagcccga ctgcctcttc gctgggttca caggctcagg	360
cagggacagg gctttcctcc ctttcctgga tgtaggaagg cagattccag aagcccga	420
agaaggcggg cagagctggg cagagccgcc gggaggatcc caggctctgga gcgccaggca	480
cgggcgggcg ggaactggag gtcgcgcggg cggttccaca gctccaggcc gggtcagggc	540
ggcggctgcg gggcgggccg ggctggggcc tgactgaccg gccggtgatt ccccgagag	600
gatttcgtgt accagtttaa gggcatgtgc tacttcacca acgggacgga gcgcgtgcgt	660
cttgtaacca gacacatcta taaccgagag gactacgcgc gcttcgacag cgacgtgggg	720
gtgtaccggg cggtgacgcc gcagggcgcg cctgttgccg agtactggaa cagccagaag	780
gaagtcctgg agaggaccg ggcggagttg gacacggtgt gcagacacaa ctacgaggtg	840
gggtaccgcg ggatcctgca gaggagaggt gagcttcgtc gcccctccgt gagcgcaccc	900
ttggccggga ccccgagtct ctgtgccggg agggcgatgg gggcgaggtc tctgaaatct	960
tgagcccagt tcattccacc ccagggaaag gaggcggcgg cgggggtggt gggggcaggt	1020
gcatcggagg ggcggggacc tagggcagag cagggggaca agcagagttg gccaggctgc	1080
ctagtgtccc cccagcctc ctcgtccgtc ggcctcgtcc tctgctctgg acgtttctcg	1140
cctcgtgcct tatgcgtttg cctcctcgtg ccttaccttc gctaagcagt tctctctgcc	1200
cccagtgcc accctcttc cctgcccgc ggcctcgcta gactgcccc acccagcaag	1260
gcccacagtc gcgcattcgc cgaggaagc tt	1292

<210> 23
 <211> 1291
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DQB1

<400> 23	
aagcttgtag tctttccatg aataaatgtc tctatctagg actcagaggt gtaggtcctt	60
tccttcatag aagggactga acctcttcgg gacttgggag ggtaaatacta ggcatgggaa	120
ggaaggtatt ttaccacagg accaagagaa tacgcgtgtc agaacgaggc caggcttaat	180
tcctggacct atctcgtcat tccgttgaac tctcagattt atgtggataa ctttatctct	240

Sequence Listing - additional sequences.ST25

gagggtatcca ggagcttcat gaaaaatggg atttcatgcg agaacgccct gatccctcta	300
agtgcagagg tgcattgaaa atcagcccga ctgcctcttc gctgggttca caggctcagg	360
cagggacagg gctttcctcc ctttcctgga tgttaggaagg cagattccag aagcccgcaa	420
agaaggcggg cagagctggg cagagccgcc gggaggatcc caggctctgga gcgccaggca	480
cgggcgggcg ggaactggag gtcgcgcggg cggttcaca gctccaggcc gggtcagggc	540
ggcggctgcg ggggcggccg ggctggggcc tgactgaccg gccggtgatt ccccgagag	600
gatttcgtgt accagtttaa gggcatgtgc tacttcacca acgggacgga gcgcgtgct	660
cttctaacca gacacatcta taaccgagag gactacgagc gcttcgacag cgacgtggg	720
gtgtaccggg cggtgacgcc gcagggcgcg cctgttgccg agtactggaa cagccagaag	780
gaagtcctgg agaggacccg ggcggagttg gacacggtgt gcagacacaa ctacgaggtg	840
gggtaccgag ggatcctgca gaggagaggt gagcgtcgtc gccctccgt gagcgcaccc	900
ttggccggga ccccgagtct ctgtgccggg agggcgatgg gggcgaggtc tctgaaatct	960
gagcccagtt cattccaccc cagggaagg agggcgcgcc gggggtggtg ggggcaggtg	1020
catcggaggg gcggggacct agggcagagc agggggacaa gcagagttgg ccaggctgcc	1080
tagtgtcccc ccagcctcc ccgtccgtcg gcctcgtcct ctgctctgga cgtttctcgc	1140
ctcgtgcctt atgcgtttgc ctctcgtgc cttacctcg ctaagcagtt ctctctgccc	1200
ccagtgccca ccctcttccc ctgcccggcg gcctcgctag cactgcccc cccagcaagg	1260
cccacagttg ccgattcgcc gcaggaagct t	1291

<210> 24
 <211> 1289
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DQB1

<220>
 <221> misc_feature
 <222> (448)..(453)
 <223> "N" is an unidentified nucleotide

<400> 24	
aagcttgtgc tctttcgggtg aataaatgtt tctttctagg actcagagat ctaggactcc	60
cttctttcta acacagacgt gagtgaacct cacagggcac ttgggagggg aaatccaggc	120
atgggaagga aggtatttta cccagggacc aagagaatag gcgtatcgga agaggacagg	180
tttaattcct ggacctgtct cgtcattccc ttgaactgtc aggtttatgt ggataacttt	240
atctctgagg taccaggagc tccatggaaa atgagatttc atgcgagaa gccctgatcc	300

Sequence Listing - additional sequences.ST25

ctctaagtgc agaggtccat gtaaaatcag cccgactgcc tcttcacttg gttcacaggc	360
cgagacaggg acagggcttt cctccctttc ctgcctgtag gaaggccgga tccccgaaga	420
cccccgagag ggcgggcagg gctggcanan ccnccgggag gatcccaggt ctgcagcgcg	480
aggcacgggc gggcgggaac ttgtggtcgc gcgggctgtt ccacagctcc gggccgggtc	540
aggggtggcgg ctgcgggggc ggacgggctg ggccgcactg accggccggt gattccccgc	600
agaggatttc gtgtaccagt ttaagggcat gtgctacttc accaacggga cagagcgcg	660
gcgtcttggt agcagaagca tctataaccg agaagagatc gtgcgcttcg acagcgacgt	720
gggggagttc cgggcggtga cgctgctggg gctgcctgcc gccgagtact ggaacagcca	780
gaaggacatc ctggagagga aacgggcggc ggtggacagg gtgtgcagac acaactacca	840
gttgagctc cgcacgacct tgcagcggcg aggtgagcgg cgtcgccctc tgcgaggccc	900
acccttggcc ccaagtctct gcgccaggag ggggcaaggg tcgtggcctc tgaacctgag	960
ccccgttggg tccaccccag ggaaaggagg cggcggcggt ggggtgctgg gggctgggtc	1020
atcggagggg cagggacctt gggcagagca gggggacagg cagagtgggt caagctgcct	1080
agtttcgccc catcctcccc gtccgtcggc ctcgccctct gctctgcacg ttcttgccctc	1140
gtgccttatg cgtttgccct ctcgtgccctt acctttacta agcagttctc tctgccccca	1200
atttccgccc tcttcccctg cccgcccgcc cggctagcac tgccgcaccc ggcaaggctc	1260
acctacacag ctcatgcagt gggaagctt	1289

<210> 25
 <211> 1307
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DQB1

<400> 25 aagcttgtgc tctttccatg aataaatgtc tctatctagg actcggagggt gtaggtcctt	60
tccaacataa aagtgagtga acctcaaatg gcacttgga agggtaaatc taggcatggg	120
aaggaggta ttttaccag ggaccaagag aatacgcag tcagaacgag gacaggctta	180
atttctggac ccgtctcatc attcccttga actcacagggt ttatgtggat aattttatct	240
ctgaggtttc caggagctca atggaaaatg ggatttcag cgagagcgcc ctgattccct	300
ctaagtgcag aggtctatgt aaaatcagcc cgactgcctc ttccctcgggt tcacaggctc	360
cggcagggac agggctttcc gccctttcct gcctgcagga aggcggattc ccgaagcccc	420
cagagagggc gggcagggct gggcagagcc gccgggcgga tcacaagtct ggagcgccag	480
gcacgggcgg gcgggaactg gaggtcgcgc gggcggttcc acagctccgg gccgggtcag	540

Sequence Listing - additional sequences.ST25

ggcggcgggct gcgggggcg cggggctggg gccggggccgg ggcctgactg accgggccggt	600
gattccccgc agaggatttc gtgtaccagt ttaagggcat gtgctacttc accaacggga	660
cggagcgcggt gcgtcttgtg accagataca tctataaccg agaggagtac gcacgcttcg	720
acagcgacgt ggggggtgttc cgggcggtga cgccgcaggg gccgcctgcc gccgagtact	780
ggaacagcca gaaggaaagtc ctggagagga cccggggcga gttggaacac ggtgtgcaga	840
cacaactacc agttggagct ccgcacgacc ttgcagcggc gaggtgagcg tcgtcgccccg	900
tccgtgaggc ccatccttgg caggggcccc gagtctctgc cgcgggaggg gcgaaggggg	960
cgcgccctct ggaaccttga gccttggtca ttccaccccc gctgacagga ggaggcgggg	1020
gtggtggggg caggtgcatc ggaggggcgg ggacctaggg cagagcaggg ggacaagcag	1080
agttggccag gctgcctagt gtcccccca gcctcctcgt ccgtcggcct cgtcctctgc	1140
tctggacgtt tctcgccctg tgccttatgc gtttgcctcc tcgtgcctta ctttcgctaa	1200
gcagttctct ctgccccag tgcccaccct cttcccctgc ccgccggcct cgctagcact	1260
gccccacca gcaaggcca cagtcgcgca ttcgccgag gaagctt	1307

<210> 26
 <211> 418
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DPB 4.1

<400> 26	
gggaagattt gggaagaatc gttaatatg agagagagag ggagaaagag gattagatga	60
gagtggcgcc tccgctcatg tccgccccct ccccgagag aattacctt tccagggacg	120
gcaggaatgc tacgcgttta atgggacaca gcgcttcctg gagagataca tctacaaccg	180
ggaggagtgc gcgcgcttcg acagcgacgt gggggagttc cgggcggtga cggagctggg	240
gcggcctgct gcggagtact ggaacagcca gaaggacatc ctggaggaga agcgggcagt	300
gccggacagg atgtgcagac acaactacga gctgggcggg cccatgacct tgcagcgccg	360
aggtagagtga gggctttggg ccggcggtcc cagggcagcc ccgcgggccc gtgcccag	418

<210> 27
 <211> 300
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> DPB9

Sequence Listing - additional sequences.ST25

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<400> 27
ggatccgcag agaattacgt gcaccagtta cggcaggaat gctacgcgtt taatgggaca    60
cagcgccttcc tggagagata catctacaac cgggaggagt tcgtgcgctt cgacagcgac    120
gtggggggagt tccgggcggt gacggagctg gggcggcctg atgaggacta ctggaacagc    180
cagaaggaca tcctggagga ggagcgggca gtgccggaca gggtatgcag acacaactac    240
gagctggacg aggccgtgac cctgcagcgc cgaggtgagt gagggctttg ggccggcggt    300
```

```
<210> 28
<211> 300
<212> DNA
<213> Homo sapiens
```

```
<220>
<221> misc_feature
<223> DPB New
```

```
<400> 28
ggatccgcag agaattacgt gcaccagtta cggcaggaat gctacgcgtt taatgggaca    60
cagcgccttcc tggagagata catctacaac cgggaggagt tcgtgcgctt cgacagcgac    120
gtggggggagt tccgggcggt gacggagctg gggcggcctg atgaggacta ctggaacagc    180
cagaaggacc tcctggagga gaagcgggca gtgccggaca gggtatgcag acacaactac    240
gagctggacg aggccgtgac cctgcagcgc cgaggtgagt gagggctttg ggccggcggt    300
```

```
<210> 29
<211> 300
<212> DNA
<213> Homo sapiens
```

```
<220>
<221> misc_feature
<223> DPW3
```

```
<400> 29
ctccccgcag agaattacct tttccaggga cggcaggaat gctacgcgtt taatgggaca    60
cagcgccttcc tggagagata catctacaac cgggaggagt tcgcgcgctt cgacagcgac    120
gtggggggagt tccgggcggt gacggagctg gggcggcctg ctgcggagta ctggaacagc    180
cagaaggacc tcctggagga gaagcgggca gtgccggaca gggtatgcag acacaactac    240
gagctggacg aggccgtgac cctgcagcgc cgaggtgagt gagggctttg ggccggcggt    300
```

```
<210> 30
<211> 23
<212> DNA
<213> Homo sapiens
```

```
<400> 30
```

Sequence Listing - additional sequences.ST25		
catgtggcca tcttgagaat gga		23
<210> 31		
<211> 24		
<212> DNA		
<213> Homo sapiens		
<400> 31		
gcccgggaga tctacaggcg atca		24
<210> 32		
<211> 21		
<212> DNA		
<213> Homo sapiens		
<400> 32		
cgctccctg atcgctgta g		21
<210> 33		
<211> 19		
<212> DNA		
<213> Homo sapiens		
<400> 33		
ccagagagtg actctgagg		19
<210> 34		
<211> 14		
<212> DNA		
<213> Homo sapiens		
<400> 34		
cacaattaag ggat		14
<210> 35		
<211> 24		
<212> DNA		
<213> Homo sapiens		
<400> 35		
tccccggcga cctataggag atgg		24
<210> 36		
<211> 23		
<212> DNA		
<213> Homo sapiens		
<400> 36		
ctaggaccac ccatgtgacc agc		23
<210> 37		
<211> 27		
<212> DNA		
<213> Homo sapiens		
<400> 37		

Sequence Listing - additional sequences.ST25		
atctcctcag acgccgagat gcgtcac		27
<210> 38		
<211> 22		
<212> DNA		
<213> Homo sapiens		
<400> 38		
ctcctgctgc tctggggggc ag		22
<210> 39		
<211> 25		
<212> DNA		
<213> Homo sapiens		
<400> 39		
actttacctc cactcagatc aggag		25
<210> 40		
<211> 32		
<212> DNA		
<213> Homo sapiens		
<400> 40		
cgtccaggct ggtgtctggg ttctgtgccc ct		32
<210> 41		
<211> 23		
<212> DNA		
<213> Homo sapiens		
<400> 41		
ctggtcacat gggtggtcct agg		23
<210> 42		
<211> 26		
<212> DNA		
<213> Homo sapiens		
<400> 42		
cgcctgaatt ttctgactct tcccat		26
<210> 43		
<211> 24		
<212> DNA		
<213> Homo sapiens		
<400> 43		
atcccgggag atctacagga gatg		24
<210> 44		
<211> 23		
<212> DNA		
<213> Homo sapiens		
<400> 44		

Sequence Listing - additional sequences.ST25		
aacagcgccc atgtgaccat cct		23
<210> 45		
<211> 27		
<212> DNA		
<213> Homo sapiens		
<400> 45		
ctggggaggc gccgcgttga ggattct		27
<210> 46		
<211> 33		
<212> DNA		
<213> Homo sapiens		
<400> 46		
cgtctccgca gtcccgggtc taaagttccc agt		33
<210> 47		
<211> 18		
<212> DNA		
<213> Homo sapiens		
<400> 47		
atcctcgtgc tctcggga		18
<210> 48		
<211> 18		
<212> DNA		
<213> Homo sapiens		
<400> 48		
tgtggtcagg ctgctgac		18
<210> 49		
<211> 18		
<212> DNA		
<213> Homo sapiens		
<400> 49		
aaggtttgat tccagctt		18
<210> 50		
<211> 40		
<212> DNA		
<213> Homo sapiens		
<400> 50		
ccccttcccc accccaggtg ttcctgtcca ttcttcagga		40
<210> 51		
<211> 24		
<212> DNA		
<213> Homo sapiens		
<400> 51		

Sequence Listing - additional sequences.ST25		
cacatggg	ctgttggagt gtcg	24
<210>	52	
<211>	22	
<212>	DNA	
<213>	Homo sapiens	
<400>	52	
gtgagtgcgg	ggtcgggagg ga	22
<210>	53	
<211>	18	
<212>	DNA	
<213>	Homo sapiens	
<400>	53	
cacccaccgg	gactcaga	18
<210>	54	
<211>	22	
<212>	DNA	
<213>	Homo sapiens	
<400>	54	
tggccctgac	ccagacctgg gc	22
<210>	55	
<211>	21	
<212>	DNA	
<213>	Homo sapiens	
<400>	55	
gagggtcggg	cgggtctcag c	21
<210>	56	
<211>	16	
<212>	DNA	
<213>	Homo sapiens	
<400>	56	
ctctcaggcc	ttgttc	16
<210>	57	
<211>	16	
<212>	DNA	
<213>	Homo sapiens	
<400>	57	
cagaagtcgc	tggtcc	16
<210>	58	
<211>	19	
<212>	DNA	
<213>	Homo sapiens	
<400>	58	

Sequence Listing - additional sequences.ST25		
ttctgagcca gtcctgaga		19
<210> 59		
<211> 20		
<212> DNA		
<213> Homo sapiens		
<400> 59		
ttgccctgac caccgtgatg		20
<210> 60		
<211> 20		
<212> DNA		
<213> Homo sapiens		
<400> 60		
cttcctgctt gtcattctca		20
<210> 61		
<211> 18		
<212> DNA		
<213> Homo sapiens		
<400> 61		
ccatgaattt gatggaga		18
<210> 62		
<211> 19		
<212> DNA		
<213> Homo sapiens		
<400> 62		
accgctgcta ccaatggta		19
<210> 63		
<211> 18		
<212> DNA		
<213> Homo sapiens		
<400> 63		
ccaagaggtc cccagatc		18
<210> 64		
<211> 20		
<212> DNA		
<213> Homo sapiens		
<400> 64		
tcatcatagc tgtgctgatg		20
<210> 65		
<211> 21		
<212> DNA		
<213> Homo sapiens		
<400> 65		

Sequence Listing - additional sequences.ST25		
agaacatgtg atcatccagg c		21
<210> 66		
<211> 23		
<212> DNA		
<213> Homo sapiens		
<400> 66		
ccaactatac tccgatcacc aat		23
<210> 67		
<211> 23		
<212> DNA		
<213> Homo sapiens		
<400> 67		
tgacagtgac actgatggtg ctg		23
<210> 68		
<211> 21		
<212> DNA		
<213> Homo sapiens		
<400> 68		
ggggacaccc gaccacgttt c		21
<210> 69		
<211> 22		
<212> DNA		
<213> Homo sapiens		
<400> 69		
tgacagacaca actacggggt tg		22
<210> 70		
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Sequence Listing - additional sequences.ST25

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Sequence Listing - additional sequences.ST25		
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cagaggtcgc ctctgga		17
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aaggccagcg ttgtctcca		19
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tggctctggtt aaaactcc		18
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tcctggtcct gaccgaga		18
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Sequence Listing - additional sequences.ST25
tctgggaggt ttccgtgta 19

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tacgcctagt acaaccg 17